

**REMARKS**

After entry of this Amendment, claims 9-14 and 16 - 32 are pending in the application. Claims 9, 14 and 17 are amended. Claims 27 - 32 are added. Claim 14 is amended to correct minor grammatical errors and to incorporate claim 15 which is cancelled without prejudice. Reconsideration of the application is requested.

The Amendment to the specification incorporates into the written description the maintained coaxial relationship without play of the inner and outer races or rings of the deep groove ball bearing that is clearly shown in Figure 2 of the drawings as originally filed and described as "with a non-play bearing" at page 2, line 9. No new matter has been added. Entry of the Amendment to the Specification is respectfully requested.

Claims 9 - 16 were rejected under 35 U.S.C. §112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. In particular regarding claim 9, the Examiner states that the limitation of a coaxial rolling contact bearing is confusing as to what the bearing is coaxial with. Claim 9 has now been amended to require that the one of the control arm driving arm and connecting rod is provided with a coaxial rolling contact bearing relative to a passage in at least one of the first and second bearing points of the four-hinged wiper arm. Further, claim 9 requires that inner and outer races of the bearing are axially and radially fixed to be non-rotatable with respect to the connecting rod and at least one of the control arm and driving arm allowing transmission of large radial and axial forces without play. Egner-Walter does not show or disclose this feature. In fact, Egner-Walter shows that there is play relative to the inner and outer races or rings and that it is essential that the rings are adjustable in relation to each other (col. 1, lines 74 - 75) and that irregular position of the two axes of rotation of the rings is adjustable by changing the angular position of the connecting rod. No new matter has been added, only an explanation of what is shown in the drawings and now detailed in the specification. Claim 14 now incorporates the limitations of claim 15. Claim 15 is cancelled without prejudice.

This Amendment to claim 9 and 14 traverse and overcome the rejection under 35 U.S.C. §112, 2nd paragraph.

In the Office Action dated October 23, 2003, claims 9-10, 12-15, 17-18, 20-23 and 25-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schill et al. (U.S. Patent No. 5,884,357) in view of Egner-Wagner (GB 2145168) and claims 11 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schill et al. The Examiner states that it would be obvious to combine Egner-Walter's deep groove ball bearing connection with Schill et al.'s ball and socket joint to get more life out of the joint connection. The Applicant respectfully submits that, as explained in detail in the response to the prior Office Action, the Examiner's reliance on the non-analogous art of Egner-Walter is inappropriate. The Egner-Walter reference is not analogous art and is not reasonably pertinent to the particular problem involved in the present invention. One skilled in the art of a four-hinged wiper arm would not search or have knowledge of a connecting gear for a drive motor. In Monarch Knitting Machinery Corp. v Sulzer Morat GmbH, 139 F.3d 877, 45 U.S.P.Q.2d 1977 (Fed. Cir. 1998), the Federal Circuit held that when applying the two-step test regarding analogous versus non-analogous art, which requires the examination of the field of the inventor's endeavor and the particular problem in which the inventor was involved, it is error to define "the problem in terms of the solution." The Egner-Walter reference discloses a connector gear for a crank arm of a drive motor. The Egner-Walter reference does not relate to a four-hinge wiper arm connection art, and is therefore outside of the inventor's field of endeavor. The Egner-Walter reference is not reasonably pertinent to the particular problem involved in the present application, since the present application is concerned with four-hinged wiper arm connections, while the Egner-Walter reference is concerned with the connector gears for a crank arm of a drive motor. Reconsideration of the Examiner's rejection of claims 9-15, 17-18 and 20-23 is requested.

If the Egner-Walter reference is considered to be analogous art, it is respectfully submitted that the combination fails to teach or suggest the features of

claims 9-15, 17 - 18, and 20 - 23 that the rolling-contact bearing is a co-axial rolling-contact bearing. In Egner-Walter, the outer ring 16 of the grooved ball bearing 15 has an axis of rotation that is changed in relation to the axis of rotation of the inner ring 14 so that the control element 18 changes the position of the outer ring 16 in relation to a connecting rod 11 with the result that the position of the outer ring 16 in relation to the inner ring 14 is also changed by angle  $\alpha$  as shown in Fig. 2. This results in a corresponding angle  $\alpha$  for crankpin 13 as shown Fig. 2 (i.e., resulting in a non-coaxial configuration that physically "wobbles" off center while rotating). In contrast, claim 9 includes a coaxial rolling-contact bearing 9, 11 (i.e., that does not physically "wobble" while rotating, but that is connect and using a method referred to in the art as "wobble riveting."). Thus, the present invention provides at least one bearing point of a four-hinge wiper arm such that there is provided a non-play transmission of large radial and axial forces. Therefore, whereas the present invention provides a four-hinge wiper arm having non-play transmission of the large radial and axial forces, the grooved ball bearing in the connecting gear of Egner-Walter provides a movable outer ring in relationship to the inner ring to compensate the radial play in the grooved ball bearing. Claim 17 now requires that the bearing has a first member axially fixed in the recess of the connecting rod or driving arm and a second member coaxially aligned to the first member in a non-play relationship. Reconsideration of the Examiner's rejection of claims 9 -15, 17-18, and 20-23 is requested.

The cited art does not show or disclose the feature of claim 14 wherein the riveted bolt is secured by a process referred to in the art as "wobble riveting" in a passage of at least one of the driving arm and control arm, and by "wobble riveting" at the inner ring of the rolling-contact bearing. The Examiner states that the riveted bolt is secured by wobble riveting, citing Figure 2, however the text of Egner-Walter does not explicitly mention wobble riveting, which is a specific type of riveting process. This type of joint is distinct and different from a "wobbling" joint as evidenced by the non-coaxial configuration on the crankpin 13 taught in Egner-Walter.

Claims 16 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schill et al. in view of Egner-Wagner and further in view of

Roodenburg (U.S. Patent No. 5,009,412). The Examiner states that although Schill et al. and Egner-Wagner fail to teach replacing the second bearing point 11, which is a universal joint, with a ball bearing, Roodenburg teaches that the ball bearings and universal joints are interchangeable and ball bearing joints are preferred since universal joints are more expensive. Therefore, the Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Roodenburg's teachings that ball bearing joints are preferred over universal joints to Schill et al. in view of Egner-Wagner's invention. Further, the Examiner rejected claims 16 and 24 as being unpatentable over Schill et al. and Egner-Wagner and further in view of Young. The Examiner states that Young teaches that ball bearings are preferred over conventional simple bushings. The Applicants respectfully submit that Roodenburg and Young are non-analogous art. One skilled in the art of a four-hinged wiper arm would not search or have knowledge of the art related to an earthquake simulator or fishing reel main shaft isolation support system. Nor are these references reasonably pertinent to any problem confronted by one of skill in the relevant art. The specification on page 4, lines 6-8, states that deep groove ball bearings are a standard part already known in the technical world. However, there is no teaching or suggestion in the prior art to use such deep groove ball bearings in the art of four-hinged wiper arms. The problems of Roodenburg and Young are completely unrelated to the problems facing one of skill in the art of the instant application. Reconsideration of the Examiner's rejection of claims 16 and 24.

Claim 25 requires that the bolt includes a radially protruding flange having one side resting against the inner ring and an opposite side resting against one of the drive arm and control arm. The advantages of the flange include that the flange provides a good support against the forces generated during the riveting process and provides proper spacing between the control arm and the driving arm or control arm. Further, the flange provides a stable connection of the riveted bolt to the deep groove ball bearing and the drive arm or control arm. This feature is not shown or disclosed in any of the prior art. Reconsideration of the Examiner's rejection of claim 25 is requested.

Claim 26 includes features of at least one of the first and second bearing points having an outer ring of a deep groove ball bearing secured in an axially-fixed, non-rotatable manner within a recess of the connecting rod, one end of a riveted bolt fixedly secured into a passage in at least one of the driving arm and the control arm with an opposite end of the riveted bolt being connected non-rotatably to the inner ring of the deep groove ball bearing, such that the first and second bearing points provide non-play transmission of large radial and axial forces. In Egner-Walter, the outer ring 16 of the grooved ball bearing 15 has an axis of rotation that is changed in relation to the axis of rotation of the inner ring 14 so that the control element 18 changes the position of the outer ring 16 in relation to a connecting rod 11 with the result that the position of the outer ring 16 in relation to the inner ring 14 is also changed by an angle  $\alpha$  as shown in Fig. 2. In contrast, the present invention discloses that at least one of the first and second bearing points have an outer ring of a deep groove ball bearing 11 secured in a recess of the connecting rod. The fit is structured so that the one race of the deep groove ball bearing is axially fixed in the recess and will not turn. One end of the riveted bolt 12 is fixedly secured into a passage 13 of the driving arm 4 or the control arm 5. The opposite ends of the riveted bolt are connected rotation tight to the inner ring of the deep groove ball bearing so that they do not rotate. The present invention provides at least one bearing point of a four-hinge wiper arm such that there is provided a non-play transmission of large radial and axial forces. As shown in Figure 2, and discussed in Column 2, Lines 28 - 32, there are two separate axes of rotation D1 and D2 in Egner-Walter having a difference between the two axes of an angle  $\alpha$ . In the Office Action, in Paragraph 9b, the Examiner states that there is a point where the inner ring 14 and the outer ring 16 are coaxial in Egner-Walter. However, the specification of Egner-Walter teaches away from the inner and outer rings being coaxial. On Page 1, Lines 61 - 117, Egner-Walter states that the main object of the invention is to provide a connection between the driving member and the push rod of the connecting gear that is free of play and of noise as possible. Egner-Walter goes on to say that the aim to achieve this would be a selection procedure which is time consuming and expensive. To avoid this selection

procedure, a provision is made for the rings to be adjustable in relation to each other and this enables bearing play to be reduced or completely eliminated in a simple manner. Therefore, in the preferred embodiment of Egner-Walter, the relative angular position of the axes of rotation of the rings is adjustable. This is done by changing the angular position on the connecting rod in relationship to the plane of rotation of the driving member. In another embodiment of the invention, one ring is adjustable in relation to the other ring by the force of the spring element. In Lines 112 - 117, Egner-Walter states that the axis of rotation of the outer ring is changed in relation to the axis of the rotation of the inner ring because the connecting rod when linked to the driven member via a ball and socket joint cannot be moved in a parallel manner. Therefore, whereas the present invention provides a four-hinge wiper arm having non-play transmission of the large radial and axial forces, the grooved ball bearing in the connecting gear of Egner-Walter provides a movable outer ring in relationship to the inner ring to compensate the radial play in the grooved ball bearing.

Reconsideration of the Examiner's rejection of claim 26 is requested.

It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed. It is further submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application.

Reconsideration of the application as amended is requested. Claims 27 - 32 are added for the Examiner's consideration. The new claims 27 - 32 include features originally disclosed in the specification and/or drawings and are believed to be distinguished from the cited prior art. Consideration of claims 27 - 32 is respectfully requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

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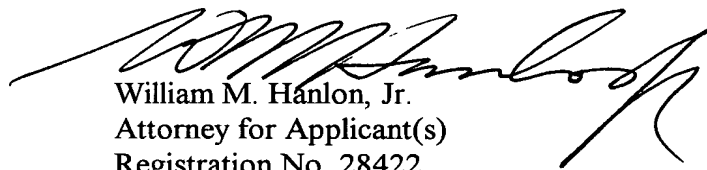
Date February 23, 2004

Reply to Office Action dated January 22, 2004

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's Amendment, the Examiner is invited to contact the Applicants' attorney at the telephone number listed below.

Respectfully submitted,

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